

IN THE CLAIMS

Please cancel Claims 1 – 37 without prejudice, and add new Claims 38 – 80 as follows:

1. – 37. (Canceled)

38. (New) A device for use in a first node of a serial bus, the device comprising:
a first module adapted to ping a second node;

a second module adapted to receive a ping response from the second node;

a third module adapted to calculate a maximum round trip delay between a first PHY

associated with the first node and a second PHY associated with the second node based at least in part upon a jitter value, and further based at least in part on the ping response sent to the second module; and

a fourth module adapted to send a configuration packet to all PHYs on the serial bus, the configuration packet containing a gap count, the gap count derived from the maximum round trip delay between the first PHY and the second PHY;

wherein at least one of said first PHY and second PHY comprises a first pair of ports and a second pair of ports and the jitter value is defined as being greater than or equal to the absolute value of a total quantity, the total quantity defined as the difference between a first quantity and a second quantity; and

wherein the first quantity comprises the sum of a first sub-quantity and a second sub-quantity, the first sub-quantity consisting of a PHY delay between the first ordered pair of ports divided by two, the second sub-quantity consisting of an arbitration response delay between the first ordered pair of ports divided by two.

39. (New) The device of Claim 38, wherein the second quantity comprises the sum of a third subquantity and a fourth subquantity, the third subquantity consisting of a PHY delay between the second ordered pair of ports divided by two, and the fourth subquantity consisting of an arbitration response delay between the second ordered pair of ports divided by two.

40. (New) The device of Claim 38, wherein the response comprises a self-identification packet.

41. (New) The device of Claim 38, wherein all PHYs of the high-speed serial bus comprise a subaction gap detection time that is greater than a maximum idle value that can occur within a subaction.

42. (New) The device of Claim 38, wherein all PHYs of the high-speed serial bus comprise an arbitration reset gap timeout value that is greater than the largest subaction gap that can occur over the high-speed serial bus.

43. (New) A method of optimizing communication over a high-speed serial bus by
5 minimizing the delay between packets transmitted over the bus, the method comprising:
 sending a ping from a first node to a second node;
 sending a response from the second node to the first node after receiving the ping;
 calculating a maximum round trip delay between a first PHY of the first node and a
second PHY of the second node based at least in part upon a jitter, and further based at least in
10 part upon the response sent to the first node;
 sending via a bus manager a configuration packet to all PHYs connected on the bus, the
configuration packet containing a minimum gap_count parameter value, the minimum gap_count
parameter value derived from the maximum round trip delay between the first PHY and the
second PHY; and
15 sending via all PHYs connected on the packets over the bus, using the minimum
gap_count parameter value as a delay between packets;
 wherein at least one of said first PHY and second PHY comprises a first pair of ports and
a second pair of ports, wherein the jitter is defined as being greater than or equal to the absolute
value of a total quantity, the total quantity defined as the difference between a first quantity and a
20 second quantity; and
 wherein the first quantity comprises the sum of a first subquantity and a second
subquantity, the first subquantity consisting of a PHY delay between the first ordered pair of
ports divided by two, the second subquantity consisting of an arbitration response delay between
the first ordered pair of ports divided by two.

25 44. (New) The method of Claim 43, wherein the second quantity comprises the sum
of a third subquantity and a fourth subquantity, the third subquantity consisting of a PHY delay
between the second ordered pair of ports divided by two, and the fourth subquantity consisting of
an arbitration response delay between the second ordered pair of ports divided by two.

30 45. (New) The method of Claim 43, further comprising preserving an ack/iso gap
between packets, wherein a first PHY sent a most recently-sent packet and a second PHY is
responding to the first PHY.

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46. (New) The method of Claim 45, wherein the second PHY is adapted to respond with an ack packet.

47. (New) The method of Claim 45, wherein the second PHY is adapted to respond with an isochronous arbitration packet.

5 48. (New) The method of Claim 43, wherein the first PHY sends an isochronous packet, observes a sub action gap, and initiates an arbitration indication.

49. (New) The method of Claim 43, wherein the first PHY sends an asynchronous packet, observes an arbitration reset gap, and initiates an arbitration indication.

10 50. (New) The method of Claim 43, wherein calculating the round trip delay comprises executing a ping command at a link layer on said first node directed at a link layer on said second node.

51. (New) The method of Claim 50, wherein calculating the round trip delay comprises calculating a round trip delay from a first link on the first node and a second link on the second node.

15 52. (New) The method of Claim 43, wherein the second PHY has a subaction gap timeout value that is greater than an IDLE value that can occur within a subaction and an isochronous interval on the high-speed serial bus.

20 53. (New) The method of Claim 43, wherein all PHYs of the high-speed serial bus comprise a subaction gap detection time that is greater than a maximum idle value that can occur within a subaction.

54. (New) The method of Claim 43, wherein all PHYs of the high-speed serial bus comprise an arbitration reset gap timeout value that is greater than the largest subaction gap that can occur over the high-speed serial bus.

55. (New) The method of Claim 43, wherein the response comprises a self-ID packet.

25 56. (New) A computer-readable medium containing instructions which, when executed by a processor, minimize the delay between packets transmitted over a high-speed serial bus, by performing the method comprising:

sending a ping from a first node to a second node;

sending a response from the second node to the first node after receiving the ping;

calculating a maximum round trip delay between a first PHY of the first node and a second PHY of the second node based at least in part upon a jitter, and further based at least in part upon the response sent to the first node;

5 sending via a bus manager a configuration packet to all PHYs connected on the bus, the configuration packet containing a minimum gap_count parameter value, the minimum gap_count parameter value derived from the maximum round trip delay between the first PHY and the second PHY; and

sending via all PHYs connected on the packets over the bus, using the minimum gap_count parameter value as a delay between packets;

10 wherein at least one of said first PHY and second PHY comprises a first pair of ports and a second pair of ports, wherein the jitter is defined as being greater than or equal to the absolute value of a total quantity, the total quantity defined as the difference between a first quantity and a second quantity; and

15 wherein the first quantity comprises the sum of a first subquantity and a second subquantity, the first subquantity consisting of a PHY delay between the first ordered pair of ports divided by two, the second subquantity consisting of an arbitration response delay between the first ordered pair of ports divided by two.

20 57. (New) The method of Claim 56, wherein the second quantity comprises the sum of a third subquantity and a fourth subquantity, the third subquantity consisting of a PHY delay between the second ordered pair of ports divided by two, and the fourth subquantity consisting of an arbitration response delay between the second ordered pair of ports divided by two.

58. (New) The method of Claim 56, further comprising preserving an ack/iso gap between packets, wherein a first PHY sent a most recently-sent packet and a second PHY is responding to the first PHY.

25 59. (New) The method of Claim 58, wherein the second PHY is adapted to respond with an ack packet.

60. (New) The method of Claim 58, wherein the second PHY is adapted to respond with an isochronous arbitration packet.

30 61. (New) The method of Claim 56, wherein the first PHY sends an isochronous packet, observes a sub action gap, and initiates an arbitration indication.

62. (New) The method of Claim 56, wherein the first PHY sends an asynchronous packet, observes an arbitration reset gap, and initiates an arbitration indication.

63. (New) The method of Claim 56, wherein calculating the round trip delay comprises executing a ping command at a link layer on said first node directed at a link layer on
5 said second node.

64. (New) The method of Claim 63, wherein calculating the round trip delay comprises calculating a round trip delay from a first link on the first node and a second link on the second node.

65. (New) The method of Claim 56, wherein the second PHY has a subaction gap
10 timeout value that is greater than an IDLE value that can occur within a subaction and an isochronous interval on the high-speed serial bus.

66. (New) The method of Claim 56, wherein all PHYs of the high-speed serial bus comprise a subaction gap detection time that is greater than a maximum idle value that can occur within a subaction.

15 67. (New) The method of Claim 56, wherein all PHYs of the high-speed serial bus comprise an arbitration reset gap timeout value that is greater than the largest subaction gap that can occur over the high-speed serial bus.

68. (New) The method of Claim 56, wherein the response comprises a self-ID packet.

20 69. (New) A device for use in a first node of a serial bus, the device comprising:
means for pinging a second node;

means for receiving a ping response from the second node;

25 means for calculating a maximum round trip delay between a first PHY associated with the first node and a second PHY associated with the second node based at least in part upon a jitter value, and further based at least in part on the ping response sent to the second module; and

means for sending a configuration packet to all PHYs on the serial bus, the configuration packet containing a gap count, the gap count derived from the maximum round trip delay between the first PHY and the second PHY;

30 wherein at least one of said first PHY and second PHY comprises a first pair of ports and a second pair of ports and the jitter value is defined as being greater than or equal to the absolute

value of a total quantity, the total quantity defined as the difference between a first quantity and a second quantity; and

wherein the first quantity comprises the sum of a first sub-quantity and a second sub-quantity, the first sub-quantity consisting of a PHY delay between the first ordered pair of ports divided by two, the second sub-quantity consisting of an arbitration response delay between the first ordered pair of ports divided by two.

70. (New) A device for use in a first node of a serial bus, the device comprising:
a first module adapted to send a first signal to a second node, said first signal adapted to elicit a response from said second node;

a second module adapted to calculate a maximum round trip delay between the first node and the second node based at least in part upon a jitter value, and further based at least in part on the response elicited from the second node; and

a third module adapted to send a packet to all nodes on the serial bus, the packet containing a gap count, the gap count derived from the maximum round trip delay between the first node and the second node;

wherein at least one of said first node and said second node comprises a first pair of ports and the jitter value is defined as being greater than or equal to the absolute value of a total quantity, the total quantity defined as the difference between a first quantity and a second quantity; and

wherein the first quantity comprises the sum of a first sub-quantity and a second sub-quantity, the first sub-quantity consisting of a delay between the first pair of ports divided by two, the second sub-quantity consisting of an arbitration response delay between the first pair of ports divided by two.

71. (New) The device of Claim 70, wherein at least one of said first node and said second node further comprises a second pair of ports, wherein the second quantity comprises the sum of a third subquantity and a fourth subquantity, the third subquantity consisting of a delay between the second pair of ports divided by two, and the fourth subquantity consisting of an arbitration response delay between the second pair of ports divided by two.

72. (New) The device of Claim 70, wherein the response comprises a self-identification packet.

73. (New) A method of optimizing communication over a serial bus, the method comprising:

sending a first message from a first node to a second node;

sending a response from the second node to the first node after receiving the first

5 message;

calculating a maximum round trip delay between the first node and the second node based at least in part upon a jitter, and further based at least in part upon the response sent to the first node;

10 sending a packet to all nodes connected on the bus, the packet containing a minimum gap count parameter value derived from the maximum round trip delay between the first node and the second node; and

sending via all nodes connected on the bus the minimum gap count parameter value as a delay between packets;

15 wherein at least one of said first node and second node comprises a first pair of ports, and wherein the jitter is defined as being greater than or equal to the absolute value of the difference between a first quantity and a second quantity; and

wherein the first quantity comprises the sum of a first subquantity and a second subquantity, the first subquantity comprising a PHY delay related to the first pair of ports, the second subquantity comprising an arbitration response delay related to the first pair of ports.

20 74. (New) The method of Claim 73, wherein at least one of said first node and said second node further comprises a second pair of ports, wherein the second quantity comprises the sum of a third subquantity and a fourth subquantity, the third subquantity comprising a PHY delay related to the second pair of ports, and the fourth subquantity comprising an arbitration response delay related to the second pair of ports.

25 75. (New) The method of Claim 73, wherein calculating the round trip delay comprises executing a ping command at a link layer on said first node directed at a link layer on said second node.

30 76. (New) The method of Claim 75, wherein calculating the round trip delay comprises calculating a round trip delay from a first link on the first node and a second link on the second node.

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77. (New) The method of Claim 73, wherein the second node has a subaction gap timeout value that is greater than an idle value that can occur within a subaction and an isochronous interval on the serial bus.

5 78. (New) The method of Claim 73, wherein all nodes of the serial bus comprise a subaction gap detection time that is greater than a maximum idle value that can occur within a subaction.

79. (New) The method of Claim 73, wherein all nodes of the high-speed serial bus comprise an arbitration reset gap timeout value that is greater than the largest subaction gap that can occur over the serial bus.

10 80. (New) The method of Claim 73, wherein the response comprises a self-identification packet.